



CELEBRATING A NEW NATIONAL PARK

by Carol Sperling
Chief of Interpretation and Visitor Services

IF YOU WERE VISITING AROUND NOON ON A BEAUTIFUL breezy day in mid September last year, you might have been surprised to find more people at the amphitheater than out on the dunes or in the picnic area. On September 13, 2004, Secretary of the Interior Gale Norton signed a declaration re-designating Great Sand Dunes National Monument as a National Park, the 58th in the system!

What’s so exciting about Great Sand Dunes’ expansion and re-designation? I asked staff members and a few visitors for their opinions on that question. Some of the responses were predictable: there will be more for visitors to do here; there is better protection for the amazing biodiversity found in the sand sheet-to-mountain-top landscape; “it’s cool” that the whole dunes-related natural system is inside park boundaries. Some answered with worried questions: what will this mean for impacts from over-visitation? And one liberated gentleman burst into song with “...Oh beautiful, for spacious skies...”

National parks are different things to different
(continued on page 2)



Upper Sand Creek Lake in Great Sand Dunes National Preserve, the mountain watershed of Great Sand Dunes National Park.

2-4 Getting Started *¡Bienvenidos!*

All the information you’ll need to prepare for a safe visit, and to know what is available in your national park and preserve. Park facilities, camping information, ranger programs, and contact information for local services.
Información en español, pagina 2.

6-9 Hiking Opportunities

Trails and routes in the dunes, forests, and alpine areas of the park and preserve. Color map, trail and route descriptions, and a chart with distances for each trail is included. Hiking destinations nearby, but outside the park, are on page 9.

10 Science Behind the Scenery

Great Sand Dunes is a hotspot for cutting edge scientific research in geology, biology, and hydrology. Find answers to geology questions, and information about research you may see going on during your stay in the park.

Superintendent’s Welcome

Welcome to one of America’s newest national parks! The newly acquired Baca lands, the expansion into a national park, and completion of the park’s expanded visitor center combined to make 2004 a very eventful year for the Great Sand Dunes.



Steve Chaney
Superintendent

As I think will be evident during your visit, many changes have recently taken place. We believe these changes, made through the use of your entrance fees, tax dollars, and private donations, are for the better. Across the country, the NPS is working very hard to reduce the large backlog of facility repair and maintenance needs, and with your help, we are making progress. The most exciting progress however, has been the establishment of the new national park, providing permanent protection for the entire Great Sand Dunes system. With respect to the remarkable resources that are entrusted to our care, our goal is to see to it that they never change.

I hope you enjoy your visit to the Great Sand Dunes. Thank you for allowing us to help care for your national parks.

A New National Park (continued from cover)

people, and they’re meant to be. From the National Park Service’s point of view, here are three of the most exciting aspects of our national park re-designation:

PROTECTING A SYSTEM

The geologic and hydrologic system that centers around the Great Sand Dunes is protected

“for the enjoyment of future generations,” as dictated by the NPS Organic Act and Great Sand Dunes’ enabling legislation. Although the old national monument protected most of the dunefield, the expanded national park and preserve includes the watersheds that are so important to the dunes, the mountains that

work with the wind to shape the dunes, and much of the larger geologic deposit of sand.

GRASSROOTS EFFORT

Local Coloradoans supported the idea and worked to make it happen—not once, but twice! The national monument was established in 1932 because

local citizens petitioned President Hoover to do so, and local people got Congress interested in the idea of a national park in the late 1990s, leading up to the Great Sand Dunes National Park & Preserve Act of 2000.

(continued on page 10)



left: Expansion to the west protects sandy grasslands; in wet years, August brings prolific sunflowers.

center: Subalpine forests and lakes in Great Sand Dunes National Preserve are critical watersheds for the dunes.

right: Alpine tundra is an unexpected part of a park set aside to preserve desert dunes.

For a Safe Visit

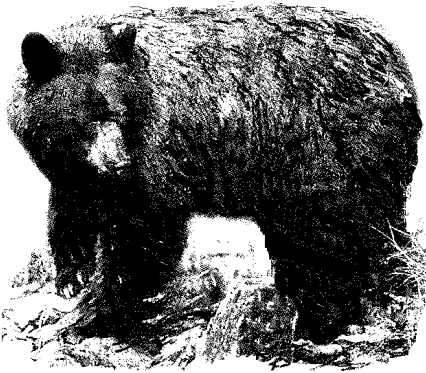
The temperature of the sand can reach 140°F (60° C). We suggest wearing closed shoes (tennis shoes or hiking boots) and drinking plenty of water when hiking on the dunes. Be careful with your pets, as the hot sand can easily burn their feet. Hike the dunes in early morning or evening for cool sand temperatures.

The weather changes rapidly at Great Sand Dunes; be prepared for a variety of weather conditions. High winds and cold temperatures can occur any time of year. If you see a thunderstorm approaching, get off the dunes immediately. Lightning can kill!

Wild animals: Never feed wild animals. It is unhealthy for them, and dangerous to you. Please help keep wildlife wild, and drive slowly on park roads to prevent accidents with crossing animals. Bears and mountain lions may be encountered, especially on summer nights. Pick up the “Wild Ways” handout at the Visitor Center to learn more about these animals. While there are no poisonous snakes or scorpions in this high elevation park, there are rattlesnakes at lower elevations elsewhere in the San Luis Valley.

At 8,200 feet (2,499 m) above sea level, altitude sickness can be a problem, especially if you’re accustomed to lower elevations. Symptoms include shortness of breath, headaches, and nausea. Take it slow, rest often, drink plenty of water, and avoid alcoholic beverages. Seek medical attention if your symptoms are severe.

In case of emergency, contact a ranger or call 911. A phone is located at the Visitor Center and at the campground registration kiosk.



Black Bear
Oso Negro

¡Bienvenidos!

¡Bienvenidos al Parque Nacional de las Grandes Dunas! Mientras que usted esté visitando, esperamos que aproveche la oportunidad de explorar algunas de las características únicas del parque. Desde las dunas más altas de Norteamérica hasta algunos de los picos más altos de los Rocky Mountains, este rico ecosistema sorprende continuamente a los visitantes con la estupenda diversidad de vida y paisaje.

Cosas populares para hacer:

- ¡Suba a las dunas! El paseo desde el Centro de Visitantes a la cima de la duna más alta toma como 2 horas para dar la vuelta. La elevación y la arena lo hace algo dificultoso, pero ¡vale la pena! Esté preparado para la temperatura alta de la arena, y lleve protección para el sol y agua para tomar.
- ¡Disfrutar el Arroyo del Medano! En primavera y verano, el arroyo corre por la base de las dunas. Los niños de todas las edades gozan en chapalear, jugar, o aunque sea nada más que remojar en el arroyo.
- ¡Compartir una comida en el campo! El área de comer que esta cerca del Centro de Visitantes tiene mesas, parrillas y baños sanitarios cerca . Se permiten fuegos de carbón en las parrillas; por favor extíngalos totalmente antes de irse. Y por favor: no haga fuego con leña ni alimente a los animales.

Para Seguridad a Las Grandes Dunas de Arena

En el verano, las temperaturas en la superficie de la arena pueden alcanzar hasta los ¡140 grados F (60 grados de C)! Use calcetines y zapatos en vez de sandalias para proteger sus pies contra quemaduras severas. También, recuerde traer protección para el sol, bastante agua, un sombrero, y alimentación adicional.

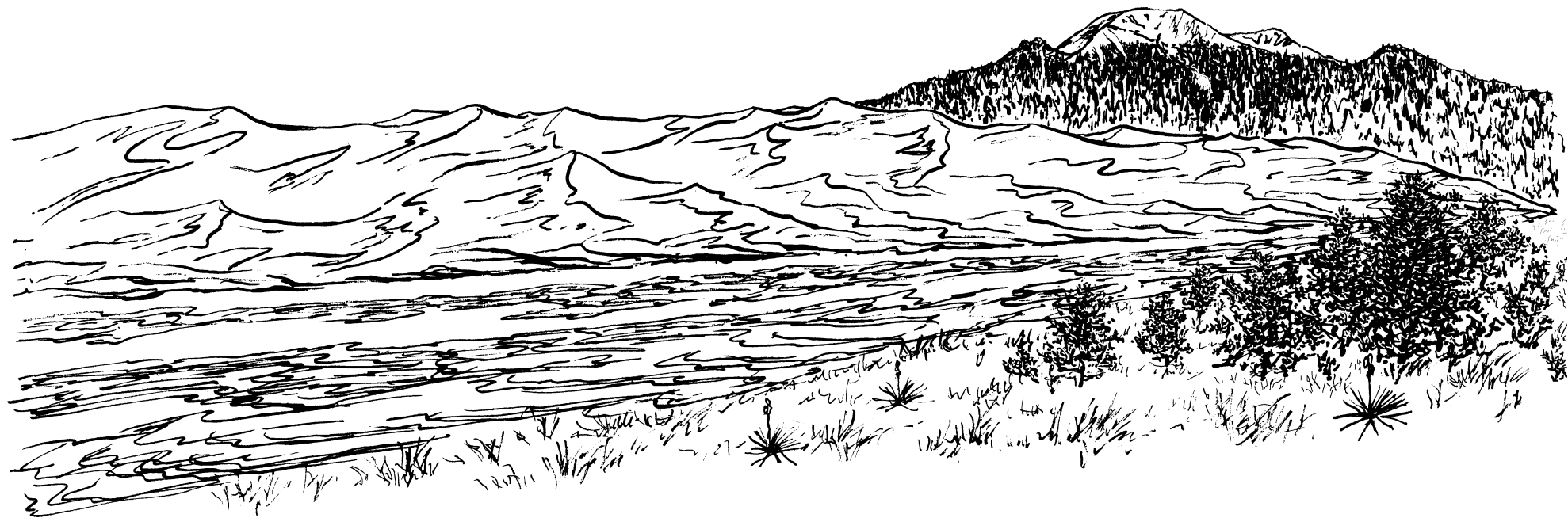
El Centro de Visitantes está a 8200' (2.470 m) de altura sobre el nivel del mar. Usted puede sentir la respiración entrecortada, o sentirse mareado. Vaya despacio, descanse a menudo, y tome bastante agua.

Se permiten las mascotas en las dunas pero deben siempre mantenerse con correas. Camine temprano en la mañana o bien de tarde para proteger los pies de la arena caliente.

Los basureros de basura están situados en el estacionamiento, en las áreas de la comida y de acampar. Nunca deje el alimento donde un oso u otro animal podría encontrarlo. Manténgase alejado de los animales salvajes : alimentar a los animales salvajes es malsano para ellos y peligroso para usted. ¡Usted está en el territorio del oso! No deje alimentos o los refrigeradores desatendidos en ningún momento. Cuando usted no está comiendo, almacene todo el alimento y bebidas en su vehículo con todas las ventanas cerradas.

Esté preparado para el clima fresco, también en el verano.

Esperamos que usted disfrute de su visita a las Grandes Dunas de Arena. Pida más información en español en el Centro de Visitantes.



Facilities

The Visitor Center is open from 9:00 a.m. to 6:00 p.m. from Memorial Day to Labor Day. Hours vary the rest of the year; please call for times. Rangers are available to answer questions and provide assistance. The newly expanded Visitor Center offers a Great Sand Dunes video presentation, exhibits, bookstore, first aid room, and back porch with viewing scope.

Interpretive Programs

Nature walks, short talks, and evening programs are offered most days during the summer months, and many days in spring



and fall. Free programs for groups may also be reserved in advance by calling 719-378-6344. Topics include geology, plants, wildlife, and history. For additional information and a schedule of activities, stop at the Visitor Center or see the weekly schedule of events posted at the campground bulletin boards and the Dunes parking lot.

Accessibility

Accessible restrooms are located at the Visitor Center, Dunes parking lot, and the campground. The Visitor Center, the amphitheater, and ranger programs held at these locations are accessible. A wheelchair designed for the sand



can be borrowed from the Visitor Center. Two accessible campsites are located in the campground. For a backcountry experience, Sawmill Canyon Backcountry Site offers a graded trail to a tent pad and accessible privy. Contact the Visitor Center for more information.

Weather

Weather is typically sunny, but temperatures are relatively cool all year at this altitude of 8,200 feet (2,499 m).

Summer highs average in the 70s F (21°C), with lows in the 40s F (4°C). High winds can develop anytime, creating frigid wind chill factors. In winter, sub-zero temperatures are possible. Bring warm, layered clothing any time of the year.

Camping

Great Sand Dunes offers developed car camping, 4WD backcountry camping, and backpacking. The frontcountry



car campground, Pinyon Flats, contains 88 sites with picnic tables and fire grates. There are no hook-ups; restrooms include flush toilets and running water. These sites cost \$12.00 per night for a maximum of six people and are first-come, first-served. Campsites vary in size; some sites may not be able to accommodate larger RVs. Three sites for groups of 12 or more may be reserved by calling the Visitor

Center at 719-378-6399. Group sites cost \$3.00 per person per night.

The amphitheater parking lot near the entrance to the campground contains a dumpster, RV dump station, water hose, and air compressor. The dump station and water hose are closed in winter.

Firewood gathering is not permitted; firewood is sold at the Visitor Center or at the Oasis store. Please pitch tents within rock walls or on tent pads. Quiet hours are from 10:00 p.m. to 6:00 a.m.; generators may be run from 7:00 a.m. to 8:00 p.m.

Backpacking requires a free permit from the rangers at the Visitor Center. You may camp on the dunes or in one of six designated sites along the Sand Ramp Trail. One-way hikes range from 1.4 to 11 miles (2.3 to 17.7 km). No open fires are permitted in the backcountry; use stoves instead. Group size is limited to six.

Car camping in the backcountry requires a high-clearance 4WD vehicle. You may camp in first-come, first-served sites along the Medano Pass Primitive Road in Great Sand Dunes National Preserve. This requires a minimum 5 mile drive down a soft sand road. For additional guidelines and seasonal closures for this area, check with a ranger.

Bears

Bears may frequent the campground; store all food in the trunk or out of sight inside a closed vehicle. Trash must be placed in the central dumpster in the amphitheater parking lot. Do not leave garbage or coolers out at your site. Please ask for the free information sheet “Wild Ways” about cougars and bears.

Pets

Leashed pets are welcome anywhere outdoors in the park and preserve. They must remain leashed and under control at all times. Do not leave your pet in the car unattended; on a sunny summer day, temperatures inside a vehicle can reach 102°F (39°C) in 10 minutes, even if the windows are cracked. If you take your pet hiking on the dunes, try to limit your time on the dunes to very early morning or early evening when the surface of the sand is cooler. Please clean up after your pets!



Restrooms

Restrooms are located at the Visitor Center, Dunes parking, picnic area, and campground.

Telephones

Public telephones are located at the Visitor Center and the campground registration kiosk.

Horse Use

Horseback riding is a good way to see Great Sand Dunes National Park and Preserve. For information on where horses can



be ridden, and horse use regulations, you may obtain a free “Horse Use Guidelines” handout from the Visitor Center.

Local Services

The facilities and services listed, unless otherwise noted, are located within 10 miles of Great Sand Dunes National Park and Preserve. The towns of Mosca, Hooper, Blanca, Fort Garland, and Alamosa offer additional facilities and services, including gas stations, restaurants, lodging, and campgrounds, but not all facilities are available in each town. Alamosa, 34 miles southwest of the park, is the largest community and offers the greatest number of services.

Emergencies	Call 911	Recreational Opportunities
National Park Service		Alamosa-Monte Vista Wildlife Refuges (USFWS) 719-589-4021
General information (recorded, 24 hours)	719-378-6300	Zapata Falls Recreation Area (BLM) 719-274-8971
Visitor Center	719-378-6399	Rio Grande National Forest (USFS) 719-852-5941
		Oasis Jeep Tours (summer only) 719-378-2222
		Red Mountain Outfitters (horseback rides) 719-589-4186
Western National Parks Association		Hot Springs (within 40 miles)
Visitor Center Bookstore	719-378-6399	Sand Dunes Swimming Pool 719-378-2807
		Splashland Hot Springs (summer only) 719-589-6307
Friends of the Dunes		Inquire at Visitor Center for additional hot springs locations
Membership and activity information	719-378-6381	
Lodging		For More Information
Great Sand Dunes Lodge (April-October)	719-378-2900	Great Sand Dunes National Park and Preserve
		11999 Hwy 150
Campgrounds		Mosca, CO 81146
Pinyon Flats (within park)	719-378-6399	web: www.nps.gov/grsa
Great Sand Dunes Oasis (seasonal)	719-378-2222	email: grsa_interpretation@nps.gov
San Luis Lakes State Park (seasonal)	719-378-2020	
Restaurants		Alamosa Chamber of Commerce 719-589-3681
Great Sand Dunes Oasis (May -September)	719-378-2222	Cole Park
		Alamosa, CO 81101
Convenience Stores/Gasoline		web: www.alamosachamber.com
Great Sand Dunes Oasis (April-October)	719-378-2222	
Medical Facilities (in Alamosa)		Alamosa Visitors Center 800-BLU-SKYS
24-hour Emergency Care		web: www.alamosa.org
San Luis Valley Regional Medical Center	719-589-2511	email: bluskys@alamosa.org
By Appointment (Monday-Friday)		
Alamosa Family Medical Center	719-589-3658	San Luis Valley Information Center 719-852-0660
San Luis Valley Physicians' Services	719-589-3000	947 1st Avenue
		Monte Vista, CO 81144
		web: www.sanluisvalleyinfo.com

Thanks to Our Partners



WNPA is a non-profit organization designed to further educational work in the national parks. Net proceeds from bookstore sales are returned to the National Park Service for education and publications, including annual funding of this newspaper.

Friends of the Dunes

Friends of the Dunes, Inc. is a nonprofit citizens support group for Great Sand Dunes National Park and Preserve. The Friends provide a forum for citizen involvement in planning, focus public interest on issues, and provide volunteer and financial assistance to the dunes. Special projects and events include funding part of the new Visitor Center film, sponsoring an annual bird count, and financial support for the current parkwide archeological survey.

For more information, or to become a Friend, call 719-378-6381, or complete the form available at the Visitor Center.



The Nature Conservancy is an international, non-profit organization that preserves plants, animals, and natural communities representing the diversity of life on Earth by protecting the lands and waters they need to survive. In 1999, the Conservancy purchased the spectacular Medano-Zapata Ranch, a 103,000-acre property that is now partly within Great Sand Dunes National Park. The acquisition of this preserve assures the long-term protection of this special landscape which harbors more than 200 species of birds, a large herd of bison, and a number of rare plant and animal species. Bison herds' customary grazing behaviors are an important element in maintaining the natural ecological system.

Through sound ecological management of these spacious grasslands and wetlands, the Conservancy partners with the National Park Service in maintaining the entire geological and biological system of the Great Sand Dunes.

In 2005, the Nature Conservancy, along with a unique consortium of private, state, and federal partners, is completing the purchase of the 97,000-acre Baca Ranch. The purchase of this ranch was mandated by legislation in order to create the Great Sand Dunes National Park, the Baca National Wildlife Refuge, and significant additions to the Rio Grande National Forest. Together these properties represent one of the largest, most diverse, and unfragmented landscapes in the state of Colorado.

by Audrey Wolk
Director of Marketing and Outreach
The Nature Conservancy

Kids’ Activity

BIG MAMMALS OF GREAT SAND DUNES NATIONAL PARK AND PRESERVE

Unscramble the letters to identify the mammals shown on this page. Then draw a line from the word to the right animal.



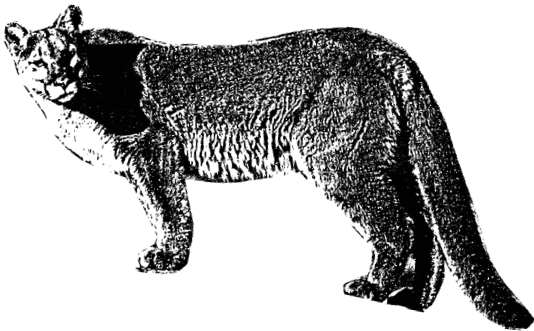
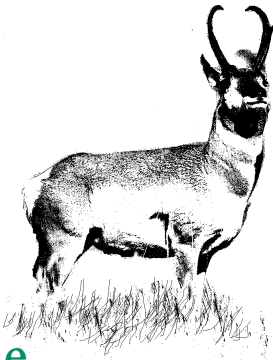
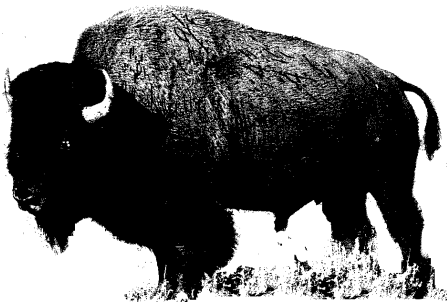
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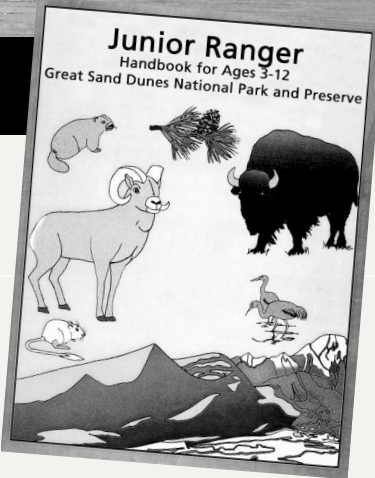


What Can Kids Do Here?



Become a Junior Ranger!

Pick up a Junior Ranger booklet at the Visitor Center for 50 cents, then do the activities and sections for your age group. When you finish, return the book to receive your official Great Sand Dunes Junior Ranger badge! Earn and collect junior ranger badges at most national park service sites.



Play in the Sand!

The dunes are made for you! They are soft, safe, and don’t have any dangerous animals or insects in them. You can build a sand castle, roll down a dune, splash in the water, look at bugs, or try to climb to the top.

Go to a Ranger Program!

Most ranger programs are kid-friendly, and include hands-on learning. Check at the Visitor Center to find out which programs are best for kids. Most days in summer there is also a “Junior Ranger” program especially for kids 5-12.

Your Fees at Work

At Great Sand Dunes National Park and Preserve, your fees directly benefit you. This year’s work includes:

- Trail-work park-wide, including erosion control.
- Planning is underway to clarify traffic flow and pedestrian walkways at the Dunes parking lot. In 2005, improved signage will be installed. This multi-year project includes interpretive signage and visitor seating.
- Bear-proof trash containers are being installed in the housing area. The bear proof food storage containers being installed in the campground this year were funded by Service-wide Repair/Rehabilitation funding.
- Stucco repairs on the dumpster wall, the park entrance sign, and the picnic area restroom building.
- Partial funding for a multi-partner study on the effects of elk and bison in the park and surroundings.



Entrance fees help fund projects such as trail work; this Student Conservation Association trail crew pauses at Music Pass.

VIPs

The term VIP has a very special meaning to the National Park Service. Not only does it stand for Very Important Person, it also represents Volunteers in Parks. Volunteers serve in all the units of the NPS, staffing visitor centers, hosting campgrounds, giving interpretive programs, rehabilitating trails, collecting research—basically doing anything and everything for little reimbursement other than the chance to live and work in a

beautiful place. At Great Sand Dunes, volunteers work with nearly every division, and become an integral part of the park staff. If you attend a program this summer, look closely—it just might be a volunteer presenting it!



To learn more about the VIP program at Great Sand Dunes, contact Volunteer Coordinator Libbie Landreth at 719-378-6342, or email libbie_landreth@nps.gov. Thanks to all the volunteers who contribute tirelessly and with great commitment to our National Parks—you make the parks a better place for all!

Great Sand Dunes Breezes Volume XVI: 2004-2005

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Hiking Opportunities



This map is also available separately as the official park map and guide. Please ask at the Visitor Center for a copy. Topographic maps from the USGS are available for purchase at the Visitor Center.

From desert sands to alpine tundra, explore an unusual combination of landscapes all found at this special place. Below are a few suggested treks.

Check with a ranger for advanced climbing routes and other off-trail hikes in the mountains and grasslands. See also the detailed hiking chart on the following page.

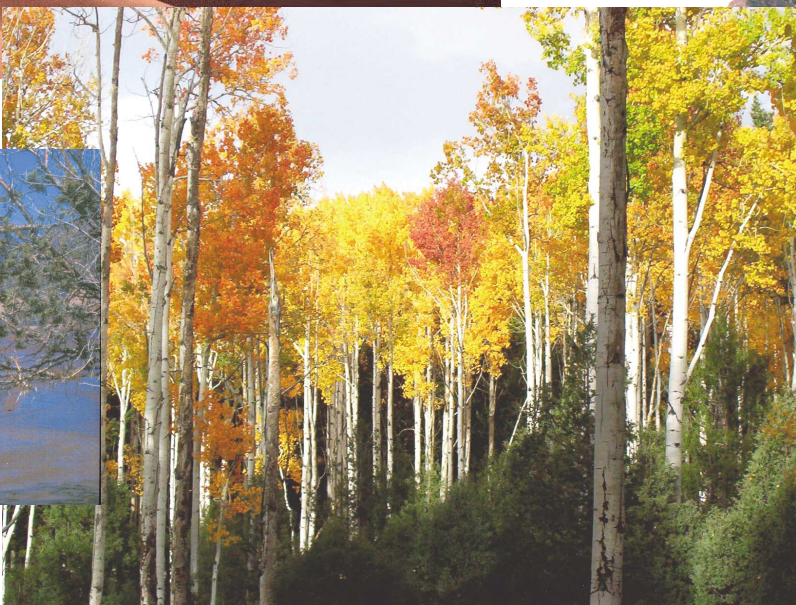
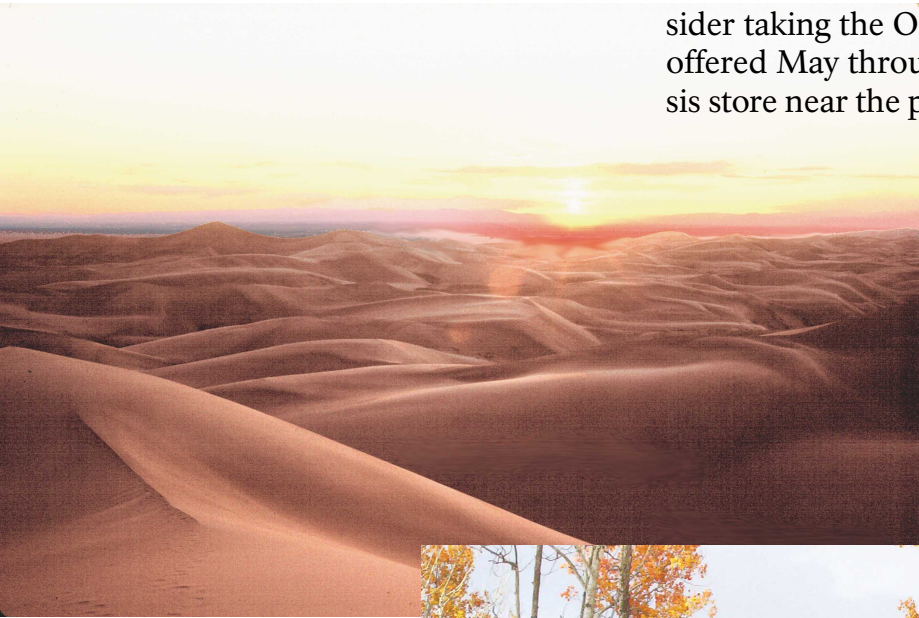
Dunes Exploration

Explore any part of the 30 square mile dunefield you wish; there are no designated trails in the sand. A dunes-accessible wheelchair is available for free loan at the Visitor Center. In summer months, plan to hike the dunes in morning or evening to avoid hot sand.

1 Medano Creek When there’s water in Medano Creek at the base of the dunes, adults and kids alike love to splash in the stream. Watch for waves in the water, a phenomenon called “surge flow.” As mounds of sand form and fall in the creek bed, water surges, similar to the action of waves at a beach.

2 The tallest dunes The High Dune is neither the highest in elevation nor the tallest, but it looks that way from the main parking lot. It is about 650 feet (198 m) high. Cross the flats and zigzag up the ridgelines to reach it. The 360 degree view is inspirational. From High Dune, the skyrising dune you see to the west is the spectacular Star Dune, rising 750 feet (229 m). It is the tallest dune in North America. To reach it from High Dune, journey another mile and a half up and down across the dunes to its summit.

3 Eastern dune ridge By high clearance 4WD vehicle, drive to Sand Pit or Castle Creek Picnic Areas. Or, with 2WD vehicle, drive to Point of No Return, then hike 1/2 mile (1K) to Sand Pit. Castle Creek offers an impressively tall, steep dune face. Both areas have close access to Medano Creek.



Forest Trails

4 Montville Nature Trail Keep this hike as an option for afternoon as an escape from the heat of the dunes. Walk along a shady mountain trail named for a late 1800s settlement, comprising 20 houses in its heyday. Rest near the trail’s highpoint, where you’ll find outstanding views of Mt. Herard, the dunes and the valley.

5 Mosca Pass Trail This trail follows a small creek to the summit of a low pass in the Sangre de Cristo mountains, winding through aspen and evergreen forests. Allow 2-3 hours to reach the pass; the trail is 3 1/2 miles (5.7 km) one way. Indians and early settlers used this route for travel into the valley.

6 Dunes Overlook/Sand Ramp Trail For a view of the dunes from the foothills of the Sangre de Cristos, begin hiking the Sand Ramp Trail in Loop 2 of the campground. Scenery abounds in all directions. Although only two miles round trip to the overlook, this trek can be extended, as the Sand Ramp trail continues for 11 miles total around the eastern and northern perimeter of the dunes.

7 Medano Pass 4WD Road Driving this road requires high clearance 4-wheel drive (not recommended for small sport utility vehicles). A scenic drive any time of the year, it is especially spectacular in fall. Creek crossings can be hazardous in spring and the road is closed when winter conditions create hazards. For those without a 4WD vehicle, consider taking the Oasis 4-wheel drive tour, offered May through October at the Oasis store near the park boundary.

Alpine Trails

8 Medano Lake/Mount Herard Access this trailhead from the Medano Pass 4WD road. Beginning at 10,000’ elevation, the trail climbs 2000’ through lush meadows and forests, ending at an alpine lake just above timberline. For advanced hikers, continue on to the summit of 13,297’ Mount Herard for a spectacular aerial view of the dunes.

9 Music Pass/Sand Creek Lakes/other alpine peaks The alpine scenery here is stunning, but requires a long drive and/or a long hike. Check with a ranger for conditions before travel. The trailhead for Music Pass from the east is accessed from Highway 69, 4.5 miles south of Westcliffe. Turn off Highway 69 to the west at the sign for Music Pass and South Colony Lakes Trailhead. At the “T” junction, turn left onto South Colony Road. At the end of the ranch fence on the right, you’ll see another sign for Music Pass. 2WD drivers should park where the Rainbow Trail crosses Music Pass Road. From here, walk 3.5 miles to the pass. 4WD drivers may drive another 2.5 rough miles to the end of the road. From here, it is just a steep one mile hike to the pass. Music Pass is at treeline, with a great view of the Upper Sand Creek basin. From the pass, hike farther to two alpine lakes, or to any one of the 13,000’ peaks above the basin. “The Essential Guide to Great Sand Dunes National Park and Preserve” in the bookstore has climbing information for the peaks.

You may also access these lakes and peaks via the Sand Ramp Trail, connecting with the Sand Creek Trail from the west. Check with a ranger for details.



Great Sand Dunes National Park and Preserve has opportunities for experiencing a variety of landscapes and wildlife, including elk (above).

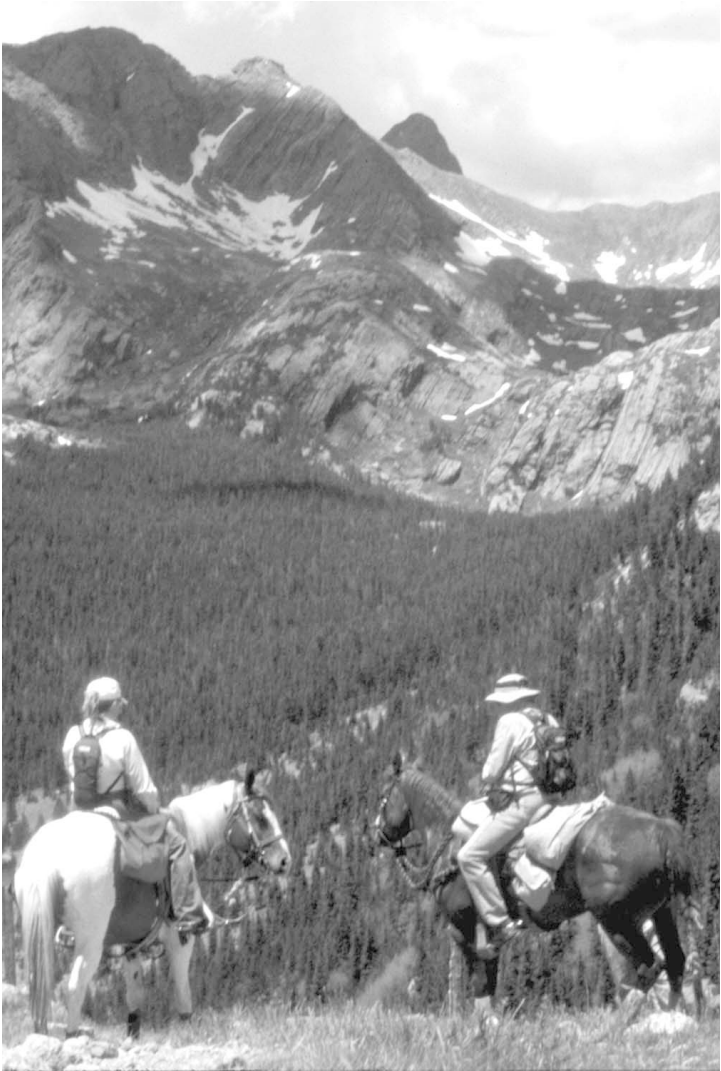
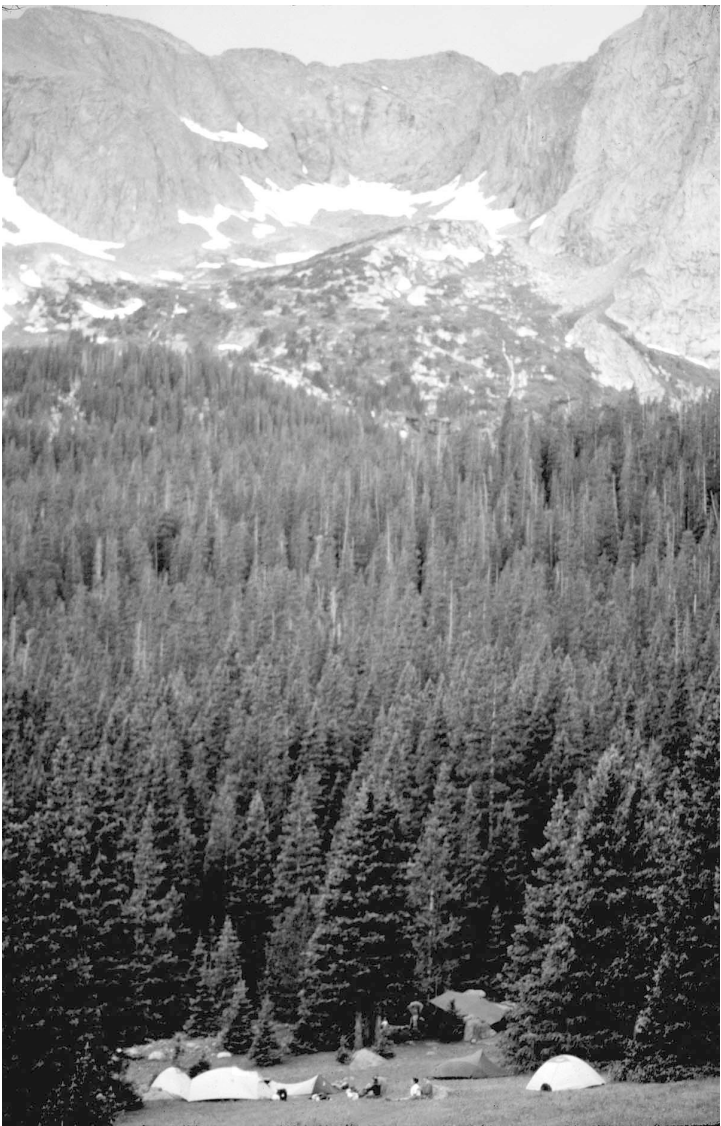
Hiking Chart

Easy to Moderate Hikes			
Name	One-way Distance Miles (km)	Comments	Location of Trailhead
Medano Creek (or dry creekbed)	variable	Stroll up or down stream, relatively flat	Dunes Parking Lot
Sand Pit	.5 (.8)	Medano Creek usually found year round here	Point of No Return
Montville Nature Trail	.5 (.8) loop	Trail guide may be purchased at trailhead or Visitor Center	Top of hill just north of Visitor Center
Piñon Flats Trail	.5 (.8)	Trail from campground to dunes	Campground, near site 32
Escape Dunes and Ghost Forest	.75 (1.2)	Follow Medano Creek upstream to low dunes.	Dunes Parking Lot
Medano Wetlands (seasonal)	1.3 (2)	Downstream to end of trees (ask ranger for locations and status)	Dunes Parking Lot
Castle Creek	2.5 (4)	Follow creek upstream	Dunes Parking Lot
Dunes Overlook	1 (1.6)	Views from foothills	Campground, near site 62
Wellington Ditch Trail	1 (1.6)	Relatively flat with views from foothills	Montville Parking Lot or loop 3 of the campground
High Dune	1.15 (1.9)	Follow the ridgelines until you reach the top	Dunes Parking Lot
Mosca Pass	3.5 (5.6)	Forests, small stream	Montville Parking Lot
Sand Ramp Trail	Variable, up to 11 (17.8)	Eastern and northern perimeter of dunes	Sand Ramp Trail near site 62 in campground
Star Dune	3.8 (6.1)	Downstream to its base	Dunes Parking Lot
Difficult Hikes - Check with rangers first!			
Medano Lake	3.5 (5.6)	1,900- foot (579 m) elevation gain	Medano LakeTH - (high- clearance 4WD needed)
Music Pass	4- 6 (6.4- 9.7)	Beautiful high alpine environment	2WD parking on Music Pass Road (4WD required to go further)
Carbonate Peak	3 miles (4.8 km) south of Mosca Pass	Bushwhack along crest in heavy timber	Mosca Pass
Sand Creek Lakes	Lower - 3.0 (5.2) Upper - 3.5 (6.0)	Alpine lakes and majestic mountains	Music Pass 4WD TH
Mount Herard	5.2 (8.8)	Hike to 12,500' (3,800 m) saddle to west, then on to summit	Medano LakeTH - (high- clearance 4WD needed)

Top: Backpacking in Upper Sand Creek Basin, Great Sand Dunes National Preserve.

Middle: The Montville Nature Trail is an easy, 0.5 mile (1K) trail along a stream in the foothills of the Sangre de Cristo Mountains. Numbered stops are interpreted in a booklet available at the Visitor Center or trailhead.

Bottom: The view from Music Pass; Milwaukee Peak, 13,522', is in the distance.



Other Nearby Destinations in the Sangre de Cristo Mountains

(Hiking trails and routes for Great Sand Dunes National Park and Preserve are listed on pages 6-8.)



Zapata Falls This 30 foot (9 m) high waterfall cascades within a narrow semi-cavern about 10 miles south of the dunes. It is especially refreshing on a hot summer afternoon. Drive south on Highway 150 to the Zapata Falls Recreation Area sign, drive 3 miles up a gravel road, then hike 1/2 mile (0.8 km) to the creek. Wade upstream into the narrow cave to see the falls. Water is swift in early summer - use caution!. *Zapata Falls is managed by the Bureau of Land Management (BLM).*



Blanca Peak As the fourth highest in Colorado, this is the most popular peak to climb near the Great Sand Dunes. However, it is a long trek. With a 2WD vehicle, the hike is about 7 miles (11.3 km) to the summit, with an elevation gain of about 6500' (1981 m). With the average 4WD, you may reduce the hike by a mile or two, but the access road is extremely rough. Many vehicles have been damaged on this road. This hike is spectacular whether you want to climb to the summit or not: the trail passes by Lake Como, Blue Lakes, and Crater Lake, all alpine lakes.

To access Blanca Peak, drive south from Great Sand Dunes on Highway 150 to mile marker 3 (3 miles north of Highway 160). Look for a dirt road heading east toward the mountains, and a small sign "Entering Public Lands." Please "Leave No Trace" if you camp. *Blanca Peak is part of the Rio Grande National Forest, US Forest Service.*



South Zapata Lake Nestled at the base of 14,043' (4280 m) Ellingwood Peak, this is the most easily accessible alpine lake in the Great Sand Dunes area. From Zapata Falls (at left), hike 4 miles (6.5 km) farther along a well-maintained trail to the lake (2300' or 701 m elev. gain). Marmots and pikas chirp and whistle from the tundra slopes above. Twin Peaks, 13,580' (4139 m) may be climbed by ascending the steep tundra west of the lake. *South Zapata Lake is managed by the US Forest Service, Rio Grande National Forest.*



Willow Lake One of the premier alpine lakes in Colorado, this is especially spectacular in mid-summer, when wildflowers are abundant in wet years. An 80 foot (24 m) high waterfall graces a cliff above the lake. This area also serves as a base camp to climb Kit Carson Mountain, 14,165' (4318 m). Please use "Leave No Trace" guidelines when camping; set tents at least 300 feet from the lake. Access Willow Lake from the trailhead just beyond the town of Crestone. The hike is 4 miles (6.5 km) one way, 2760' (801 m) elev. gain. *Willow Lake is part of the Rio Grande National Forest, managed by the US Forest Service.*

Ask the Geologist

Hello! My name is Andrew Valdez and I have a great job. I am a geologist here at Great Sand Dunes. I have always been curious about landscapes and wondered how they formed, so studying these dunes is right up my alley.

Whether you are seeing Great Sand Dunes for the first time or the hundredth time, the uniqueness of the area may inspire a sense of wonderment about why things look the way they do. It is my job to try and figure that out. When we understand these unique resources, we can better protect the entire system of the dunes. The research that we do has helped us to understand the importance of protecting the entire dunes’ geologic system as a national park and preserve.

Here are the answers to some of the various questions visitors have asked. Also ask at the Visitor Center for our free information sheet on geology for answers to other common questions.

Why are the dunes in this particular spot?
Since dunefields develop downwind of their sand supply, we need to know what is supplying the sand into this dune system to answer this question. In the past, the sand supplier was thought to be the Rio Grande River, but if that were the case we would expect to find dunes along much of its course, not just in one spot. A better explanation is that the sand supply comes from a lake that occasionally fills the northern part of the San Luis Valley. This lake varies in size depending on climatic conditions and can range from being totally dry to being about 16 miles (26 km) long when

completely full. Currently it is about 1 mile (1.6K) long and is known as San Luis Lake. Streams flow into this lake bringing water and sand. As the lake dries, the sand is exposed to the wind and it gets blown toward the northeast. This lake is directly downwind from the dunes and the wind-blown sand starts in the area covered by the lake. The entire valley floor, from the dunefield to the lake area, is covered by sand. Since the lake covers a limited area, the sand blown off of it is only found upwind from it. That is why there are sand dunes only in this section of the mountain front.

Why are the dunes so tall?
Sand dune shape and behavior are the result of the wind



Geologist Andrew Valdez and resource assistant Katie Hagaman survey the tallest dune (“Star Dune”) to monitor change.

patterns that create the dune. In areas where the wind blows mainly from one direction, dunes tend to migrate and are small. In areas like this where the wind blows abundantly in two or more directions, dunes tend to oscillate and get taller over time.

Why do the dunes stop at the base of the mountains?
Many people think that the mountains are the barrier that stops the dunes, but the real key is the northeasterly winds and to a lesser extent, Medano Creek. The northeast winds counter the southwest wind’s ability to push the dunes toward the mountains. As we learned in the previous question, dunes in areas with multiple wind directions tend to stop migrating and grow vertically. The position of the large dunes in the dunefield is relatively stable. Along the eastern edge of the dunefield, water flowing down Medano Creek truncates the dunefield and keeps it separated from the mountain front.

Are these dunes unique?
Yes, in the sense that every dunefield is unique. However, there are similar dunefields. Look closely at the dunes and notice that there are big sand ridges with smaller sand ridges developed on them. Every dune is connected to the dune next to it; there is no flat space between

the dunes.
The Great Sand Dunes are actually one giant dune with lots of smaller dunes superimposed on it. This is a feature called a *draa* (giant sand dune). There are also *draas* in California (Imperial Dunes, Eureka Dunes, Kelso Dunes, and Dumont Dunes) and Nevada (Sand Mountain). They have big dunes with a similar dune configuration as Great Sand Dunes. They do look a bit like the dunes here. The difference is that they are in very dry areas and the mountains surrounding them are barren. At Great Sand Dunes the mountains are lush with vegetation and that creates a sense of contrasting environments, as if the dunes shouldn’t be here. But we can also find other dunes surrounded by abundant vegetation in Oregon (Oregon Dunes), Idaho (St. Anthony’s Dunes) and Michigan (Sleeping Bear Dunes). There are even dunes on Mars! There is a crater with dunes along the edge that, from space, looks like Great Sand Dunes.

Where are the biggest sand dunes in the world?
I did some a search for other large dunes and this is what I found. In China’s Badain Jaran Desert the dunes are reported to reach 1640 feet (500 m). The tallest dunes in the Sahara Desert are around 1500 feet (457 m), and in the Namibian Desert they grow to 1,200 feet (366 m). If these reports are correct then there are dunes on other continents that are much taller than the 750 foot (225 m) Star Dune here at Great Sand Dunes.

These answers reflect our current scientific thinking about some of the questions asked about this place. I hope it inspires more questions!

A New National Park (continued from page 2)

A PARK FOR PEOPLE
Both sets of legislation—from 1932 and from 2000—state the importance of the connection between the Great Sand Dunes landscape and modern people: you and me. In Hoover’s day that relationship was described as “...spectacular and unique sand dunes and additional features of scenic, scientific, and educational interest...” In 2000, the description is much longer—after all, that was a Presidential

Proclamation and this is an Act of Congress—but includes “expanded visitor use opportunities,” “extensive opportunities for educational opportunities, ecological research, and recreational activities” and “...publicly used for hiking, camping, and fishing, and for wilderness values (including solitude...)”

THE FUTURE
Tempering the excitement of re-

designation, though, are those worrisome questions, the dilemma faced at every national park in the country: will more visitor opportunities translate into too much impact from too many visitors? How do we protect for future generations while ensuring that people have a chance to experience and enjoy their national parks?

The Great Sand Dunes are tied to their larger natural system in

the same way that national parks and park visitors are bound together: with complex connections that are sometimes difficult to understand but nearly always worth preserving. Protecting both—the dunes and the parks—for “the enjoyment of future generations” is a long standing challenge with long term benefits. We hope you think so, too!

Nature and Science at Great Sand Dunes

The new expansion of national park lands brings us the challenge of understanding and managing natural and cultural resources in a large area with many unknowns.

by Phyllis Pineda Bovin,
Park Biologist

The recent expansion into a national park and preserve was based on extensive scientific research, leading to protection of an entire geological and hydro-logical system. Today, research is vital to sound management of this newly complex park. Here are descriptions of a few of the research projects underway in 2005. Ask at the Visitor Center for more information on current projects.

Benthic Macroinvertebrates

A survey for these tiny aquatic creatures in the Sand Creek drainage is underway. This is the first of many surveys investigating the possibility of reintroducing the native Rio Grande cut-throat trout into the drainage. In 2005, the survey began early in the year, as researchers were interested in targeting species which are active during the late winter as iced-over streambeds begin to open.

Vegetation Mapping

The National Park Service has a service-wide undertaking in inventorying the biological components of the natural parks. One of the more ambitious projects beginning during 2005 is mapping the vegetation communities and structures in and around Great Sand Dunes.

The Great Sand Dunes project is quite ambitious because it will include not only the national park itself, but other area agency- and privately-managed lands as well.

Using aerial photography and/or satellite imagery, photo interpreters will determine the types of vegetation communities indicated by certain light spectrum “signatures” on the images. Field biologists will then go directly to sites randomly chosen from the images to confirm the accuracy of the interpreted “signatures.”

The results will provide both agency and private land managers with information on the types of vegetation communities in the area, helping them to monitor long-term changes on those lands as well as make educated decisions regarding grazing, fire management, and recreational uses.

Elk/Bison Study

Another very large-scale, multi-year project focuses on the interactions of elk and bison on plant communities at Great Sand Dunes and the surrounding areas. While very complex, there are three main components and expected results:

- 1) The establishment of several “vegetation exclosures” that will exclude grazing animals. Researchers will compare the plant communities in absence of the animals with those areas that are regularly grazed.
- 2) Several individual elk and bison have been collared with electronic tracking devices, allowing researchers to follow these animals at least once per week throughout the duration of the project. This provides information to researchers about where the elk and bison are moving, which areas they prefer during the different seasons, how long they stay in each area, what vegetation they favor, and whether the individuals are attached to a certain group or population of animals.
- 3) Determine elk population size and dynamics. A component of this study is to accurately determine the number of elk present in and around Great Sand Dunes, their reproductive and survival rates, and whether they function as one herd or several individual herds. An estimated 6000 elk are believed to inhabit the grasslands in the survey unit.

This research will provide the National Park Service, the Colorado Division of Wildlife, the Fish and Wildlife Service, and The Nature Conservancy with the information needed to effectively manage the large mammal populations here.

White Pine Blister Rust

Research to determine the presence and distribution of non-native White Pine Blister Rust (WPBR) at Great Sand Dunes and the surrounding areas began summer 2004 and is continuing in 2005. WPBR was introduced into North America from Asia *via* Europe during the early 20th century. While trees in Europe will often survive this disease, the trees in North America do not have any natural defenses against it.

WPBR was first discovered at Mosca Pass in 2003, having apparently become established there between 10-20 years ago. It is unknown from where the disease came, but the fungal spores that spread the disease are wind-borne. While death from this disease can take 10 or more years, it is always fatal for the tree. Many of the limber and bristlecone pine trees found in the montane forest at Great Sand Dunes exceed 1,000 years of age. These trees are found at higher elevations (9000 ft; 2750 m to

10,500 ft; 3200 m) in the park and surrounding areas, and form a very important component of the montane forest system.

The research is designed to determine the extent of the disease, the types of trees it affects, and the susceptibility of individual trees to the disease. Although answers to fighting this disease are many, many years away, this information will enable researchers to begin to address possible methods of plant resistance to the disease.

Other Current Research at Great Sand Dunes

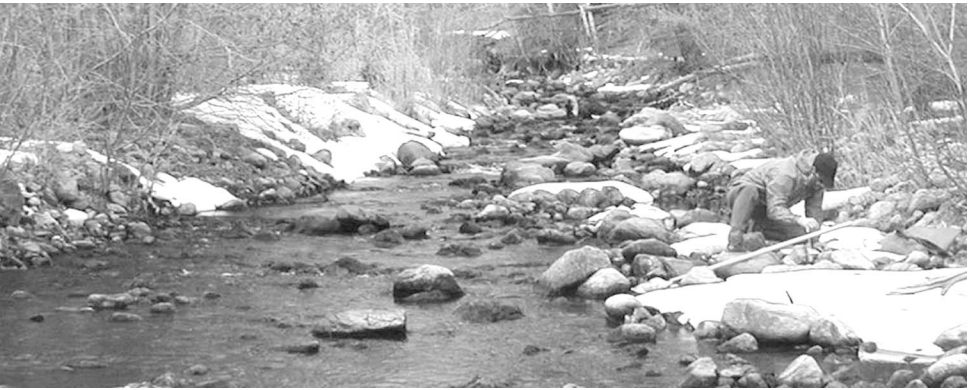
Geomorphology studies - New research into the surficial features of the valley are shedding light on the formation of the dunes, and conditions when the first people lived here. Research continues into an apparent crater to see if it is meteoric in origin.

Sand and water dating - A new technique, still under development, tries to date sand samples from various depths in the dunes. Dates from ancient to recent are being revealed by water dating of the spring waters in and around the dunes.

Seismographic station - A station was installed in 2004 to monitor subsurface movement in the region.

Archeological surveys - This major project began a few years ago, funded by the Smithsonian, the Colorado Historical Society, and Friends of the Dunes. The focus now is on newly acquired areas.

Ethnographic study - A part of the archeology project, tribes are interviewed for information about historic use of the dunes area.



Entomologist Oliver Cox collects macroinvertebrates in Sand Creek for study. Photo by Bob Zuellig, USGS.



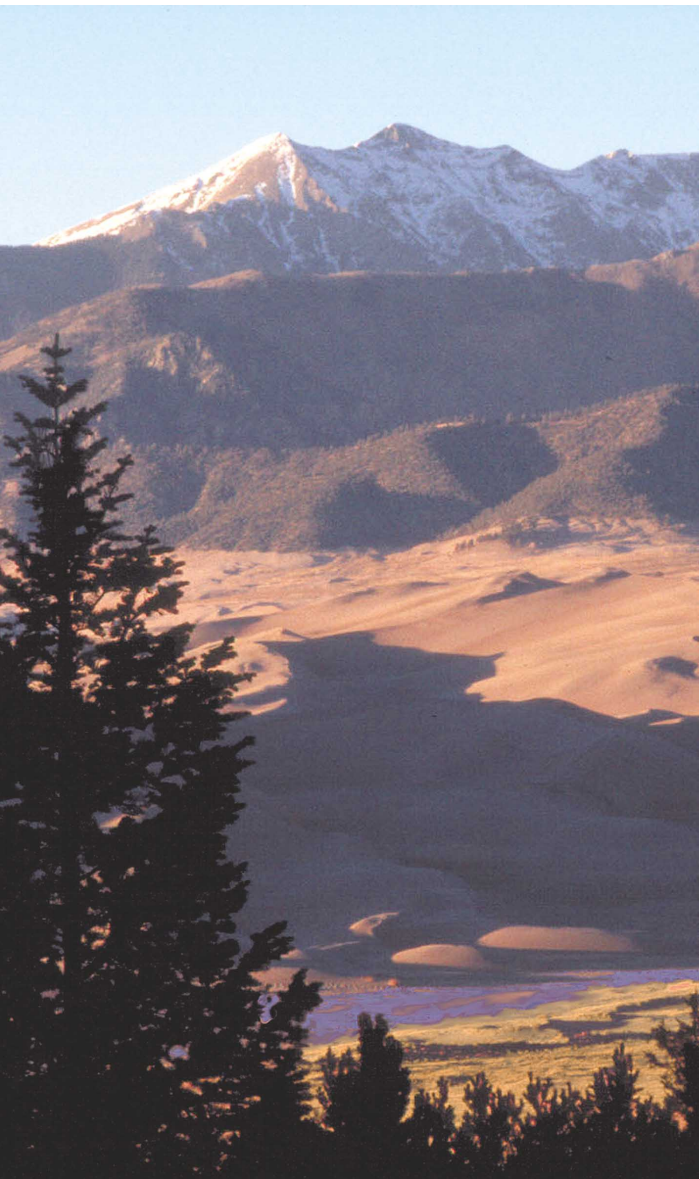
Biologist Phyllis Pineda Bovin and bison expert Tom Bragg examine grasses to determine impacts of bison (nearby) and elk.



National Park Service
U.S. Department of the Interior

Great Sand Dunes
National Park and Preserve
11999 Highway 150
Mosca, Colorado 81146

www.nps.gov/grsa



One of America’s newest national parks, Great Sand Dunes National Park and Preserve now protects alpine tundra, ancient forests, massive dunes, streams, grasslands, and wetlands.

EXPERIENCE YOUR AMERICA



Exploration of the natural world with a ranger reinforces and expands on concepts learned in the classroom. Education specialist Kathy Zelenka leads children in the Mosca Creek area.

Outdoor Learning Opportunities

New for 2005!

Discovery Room, with hands-on, interactive exhibits, to complement your field learning experience. Available by reservation in spring and fall.

Coming soon:

Newly expanded and updated online curriculum materials for K-12 teachers and students

If you are a teacher or trip leader, consider scheduling an education program with Great Sand Dunes staff. Education programs are age-appropriate, correlated with Colorado Content Standards, and incorporate active learning in the park’s magnificent outdoor classroom. Hands-on field and classroom learning experiences can bring wildlife, plants, history, geology, and other subjects alive for learners of all styles.

- Bring your group to the park for a ranger-led education program (reserve in advance)
- Schedule a ranger to visit San Luis Valley classrooms or educational events

- A curriculum guide and an educational ecology poster are for sale in the bookstore; teachers receive a 20% discount on bookstore purchases
- On-line educational activities and in-depth web pages provide students who live far away with an engaging opportunity to learn about geology, hydrology, and ecology:
www.nps.gov/grsa

To learn more about educational opportunities at the Dunes or schedule a program, please contact Education Specialist Kathy Zelenka at 719-378-6344, or e-mail kathy_zelenka@nps.gov